

Great Salt Lake Water Quality Studies

Program Update

June 5, 2006

Contracts for Projects 1A, 1B, 3 and 4 are fully executed. Projects 2A and 2B are being contracted directly through DWQ and not North Davis Sewer District due to funding constraints.

Draft Data Quality Objectives (DQOs) and Quality Assurance Project Plan (QAPP) have been sent to the Science Panel for review. Standard Operating Procedures are nearly complete and will be sent to Science Panel for review this week.

Project 1 – Birds

Gary Santolo facilitated egg breakout training with both PIs on May 22 & 23.

Project 1A - Shorebirds

John Cavitt's crews have completed the following over the last month:

- Aerial surveys completed of both eastern and western shores of Great Salt Lake (4/29/06)
- Study sites located and monitored. Each of these sites is visited every three to four days to monitor nesting and hatching success
 - West Carrington Bay (very small colony ~ 5 pairs) – two pairs in this colony initiated nesting (1 egg collected) and then gulls depredated the nests and colony abandoned nesting site. Birds are still in area and so believe they will renest.
 - Ogden Bay – Large colony of birds that have just started laying within the last week. Eggs and adults scheduled for collection next week
 - Salt Air – small colony (10 pairs) nesting along canal draining Kennecott tailings. Eggs have been collected but significant rainfall last weekend resulted in about ½ of all nests lost due to flooding. Birds will be renesting.
 - Antelope Island – Mid sized colony (20 pairs) nesting along old roadbed at northwestern side of island. Adults and eggs have been collected. This colony was chosen because there are no freshwater flows and the entire colony is feeding exclusively on brine shrimp and brine flies
- Crews are also monitoring additional sites (as part of other ongoing projects occurring within WSU research labs). These ancillary data may be used at the discretion of the Science Panel.
 - ISSR
 - Timpie Springs
 - Bear River Refuge
 - Shorelands Preserve
 - Farmington Bay

Project 1B - Gulls, Overwintering Birds

Mike Conover and Clay Perschon have now sampled all adult gulls and prepared tissue samples for Se analysis (blood, liver, and crop samples). They have collected from the Great Salt Lake all samples of the items the gulls are eating (shrimp, flies, corixids), all water samples, and all sediment samples.

Still to do before July 1 is to finish sampling gull eggs and check newly-hatched chicks for deformities.

Project 2 – Food Chain

Project 2A – Brine Flies

Wayne Wurtsbaugh was on the lake completing some preliminary dives on June 1 to look at the benthic communities. He reported that brine fly pupae densities were high and there were some larvae on the stromatolites. He is planning on completing his sampling dives the week of June 19.

Project 2B – Brine Shrimp

Brad Marden completed a full sampling run on May 24 & 25. He collected samples to evaluate the following at 9 locations:

- Artemia population
- Phytoplankton
- Chl A Selenium/POM
- Selenium in water samples: Total and dissolved.
- Selenium in the tissue of brine shrimp adults, nauplii, and cysts
- Isotopic nutrients in brine shrimp tissue
- Secchi
- Temperature vertical profiles
- Dissolved oxygen vertical profiles
- Salinity vertical profile

Project 3 – Selenium Loading

Gages are installed and operating on Lee Creek, Goggin Drain, Weber River, Bear River, and Farmington Bay outfall. Because of backwater conditions present on the KUCC outfall, a hydroacoustic gage is required. The acoustic equipment for the KUCC outfall is on order and will be installed within 3 weeks. Autosamplers are installed and operating on Goggin Drain, Farmington Bay outfall, and Bear River. The autosamplers are collecting daily samples. Water samples for the month of May were collected from all outflow sites (Goggin Drain, KUCC outfall, Bear River, Farmington Bay outfall, Weber River, Great Salt Lake Minerals brine pond, and 3 sites from the N. Arm of GSL) (East Culver, West Culvert, and Causeway Breach). The autosamplers were serviced the 3rd week of May and a second servicing is planned during the week of June 5th.

Project 4 – Selenium Flux

Bill Johnson and Dave Naftz have collected monthly water samples at four sites (different depths) on main body of GSL, along with water profile data. Sediment traps were serviced at two sites and sediment from each trap set was collected for chemical analysis. A thermistor string (6 thermistors) was added to the sediment trap cable at the deep brine site and was programmed to collect water temperature at approximately 10-minute intervals. Four sediment traps (2 pairs) were ordered for installation at a third site and will be installed during June 2006, along with the second thermistor string.

The first total dissolved gas survey was completed in the main body of GSL and 8 sediment samples were collected at various locations in the south arm from beneath the deep brine layer.

Only the top few cm of mostly organic material was collected from each sediment sample.

Potential modification: Instead of deploying a turbidity meter in the deep brine layer to assess resuspension of sediment during storm events, we are considering a change to a Sontek SW hydroacoustic "uplooker". This instrumentation will provide information on the movement of the deep brine layer at five different cells and will provide us information on particle resuspension, through the "backscatter" option.